

What is claimed is:

1. A secondary battery electrode, comprising:
a collector; and
an active material layer formed on the collector,
5 the active material layer, comprising:
first active material layer components including an electrode
active material, a binder and a first polar polymer; and
second active material layer components including a second
polar polymer, the second active material layer components being placed
10 in voids between the first active material layer components,
wherein the secondary battery electrode is used in a secondary battery
having a gel polymer electrolyte.
2. A secondary battery electrode according to claim 1,
15 wherein the second active material layer components is gel state.
3. A secondary battery electrode according to claim 1,
wherein the proportion of the total mass of the binder and the first polar
polymer in the first active material layer components is in a range from 5 to 30
20 wt% based on the mass of the electrode active material.
4. A secondary battery electrode according to claim 1,
wherein the proportion of the mass of the first polar polymer is in a range
from 3 to 70 wt% based on the total mass of the first polar polymer and the
25 binder.
5. A secondary battery electrode according to claim 1,
wherein the binder is polyvinylidene fluoride or a copolymer of
vinylidene fluoride with a compound copolymerizable with vinylidene fluoride.

6. A secondary battery electrode according to claim 1,
wherein the first polar polymer and second polar polymer are polyether
cross-linked by a cross-linkable functional group.
- 5 7. A secondary battery electrode according to claim 1,
wherein the electrode active material is a carbon material.
8. A method of producing a secondary battery electrode, comprising:
applying a slurry containing an electrode active material, a binder and a
10 first polar polymer on a collector;
drying the slurry to obtain an active material layer precursor containing
the electrode active material, the binder and the first polar polymer;
supplying a solution containing a second polar polymer into voids in the
active material layer precursor, and
15 gelling the solution,
wherein the secondary battery electrode is used in a secondary battery
having a gel polymer electrolyte.
9. A secondary battery, comprising:
20 a secondary battery electrode including a collector, and an active material
layer formed on the collector,
the active material layer, comprising:
first active material layer components including an electrode
active material, a binder and a first polar polymer; and
25 second active material layer components including a second
polar polymer, the second active material layer components being placed
in voids between the first active material layer components,
wherein the secondary battery electrode is used in a secondary battery
having a gel polymer electrolyte.

10. A secondary battery according to claim 9,
wherein the secondary battery is a bipolar battery.

11. A vehicle, comprising:

5 a secondary battery including a secondary battery electrode having a collector, and an active material layer formed on the collector,
the active material layer, comprising:

first active material layer components including an electrode
active material, a binder and a first polar polymer; and

10 second active material layer components including a second
polar polymer, the second active material layer components being placed
in voids between the first active material layer components,

wherein the secondary battery electrode is used in a secondary battery
having a gel polymer electrolyte.

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